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BOOK REVIEWS AND NOTICES*

P. Shepherd and A. C. Webster, *Selection of Risks*, pp. xvii, 327, The Society of Actuaries, Chicago, 1957.

For many years the principal reference on the selection of risks for students preparing for examinations of the Society of Actuaries has been a set of study notes prepared by Messrs. Shepherd and Webster. This textbook, the culmination of these notes, covers the subject comprehensively from the student's viewpoint. The authors' objective was a text which presents the fundamentals of selection and discusses their application in a general way, but not in detail. However, definite risk appraisals, such as appear in a company's underwriting manual, are not included. Altogether, the presentation is such that the book will undoubtedly become a classic.

Chapter 1 defines selection, shows why it is necessary, and develops its purpose. A brief account of the history and evolution of selection serves as an introduction to modern procedures. Following a list of the factors which influence mortality, there is a discussion of the sources of information and the effect of the development of knowledge upon underwriting practice. The typical variations in mortality produced by these factors are noted; this leads into an explanation of the numerical rating method and the ways to provide for extra mortality. A final section is devoted to a discussion of the relationship between underwriting policy and company objectives, wherein the authors point out that sound underwriting involves broad questions of public policy and also questions of company policy, as well as knowledge of the factors influencing mortality and how this knowledge is applied. The contents of the first chapter have been given in detail because, in the opinion of the reviewer, they are of great importance not only to students of risk selection but to everyone connected with the life insurance business. By reading these pages, all home office management personnel and agents would have a much better understanding of the underwriter's job and a clearer realization that everyone is a member of the same team.

Chapter 2, concerned with underwriting the physical risk, shows why and how medical history, physical condition and family history influence mortality. Each factor (*i.e.*, build, family history and environment, and the principal impairments of each system of the body) is discussed from the viewpoint of the statistical information available in the form of mortality studies and accumulated clinical experience. Frequent references are made to published experiences and the interpretation to be given them in the light of clinical knowledge of changing conditions. Also included are many tables showing the results of important intercompany and individual company studies. To help the

* Books and other publications noted with an asterisk (*) may be borrowed from the library of the Society of Actuaries under the rules stated in the *Year Book*.

reader, the material is organized in such a way that he can understand how and why each of the factors affects mortality. The reader is also acquainted with the experience that has accumulated and made aware of the need of taking clinical knowledge into account before the experience can be translated into ratings. It is pointed out that for many impairments the underwriting action is based very largely on clinical knowledge and experience because insurance statistics are lacking or out of date.

Chapters 3 through 8 cover the various other underwriting factors; *i.e.*, occupational hazards, insurable interest and finances, habits and morals, residence and travel, aviation, and a final miscellaneous category. For each factor the development discusses why and how mortality is affected, with emphasis on the approaches to evaluate any extra hazard that exists.

Chapter 4 on insurable interest and finances, like Chapter 1, should be read by all management personnel and agents. Of all the underwriting factors this is probably the least understood outside of home office underwriting departments. The legal and underwriting aspects of insurable interest are explained, with examples of situations where legal insurable interest exists. Stress is given to the point that an underwriter must look upon life insurance as essentially a contract of indemnity based on insurable interest at date of issue and that the aggregate insurance granted should therefore be limited to some function of the financial loss which would be caused by untimely death. The current law, based on the premise that a life insurance policy is not a contract of indemnity but a fixed obligation of the insurer to pay, puts on the underwriter the entire burden of preventing speculation. In the discussion of financial underwriting two rules used to determine the money value of a man based on his earned income are explained; it is suggested that they must be applied with judgment. Some special purposes for which life insurance is sold are described, with pertinent comment on the application of fundamental principles to each situation. The final section of this chapter is devoted to mortality on large amounts; reference is made to all of the important studies on the subject, including the 1954 report of the Joint Committee on Mortality. In conclusion, the authors state:

The careful underwriting which has continued since the early 1930's has shown that it is possible to get a satisfactory experience on large amounts. As in any other experience, only a continuation of the careful underwriting can be expected to continue the favorable results.

Chapter 7, on aviation, gives the background of this underwriting factor as well as the sources of statistics and thus fills a long-felt need. The tabulations are arranged to show as nearly continuous a picture as possible of experience over the years. Civilian and military aviation are dealt with separately. An important part of the material is the discussion of the use and interpretation of the statistics; in this regard, consideration should be given to the rapidly changing aviation picture.

The chapters on nonmedical, disability and double indemnity, industrial,

and group insurances and reinstatements and changes develop the history and current practices for each subject in the clear and concise style which is typical of the entire book. While no underwriting rules are to be found, the reader gets a good understanding of the fundamental underwriting principles and is given many suggestions as to their application in various circumstances. Particularly valuable are the numerous cautions as to certain situations which arise from time to time.

Chapters 11 and 12 are devoted to a general discussion of underwriting rules, limits, reinsurance, and provision for extra mortality. The student finds here a rationale of different rules designed to obtain basic information necessary for proper classification of the risk and also the supplementary information needed in some cases. Also discussed are the necessity for single life amount limits and the matter of reinsurance. A knowledge of the methods of providing for extra mortality and their bases (both theoretical and practical) is a necessary part of every underwriter's equipment. The authors have provided for this very well and their discussion of reserves, cash values, dividends, and removal of ratings is also very helpful. They emphasize the necessity of closely following the pattern of substandard mortality in an ever changing pattern of all types of mortality, standard and substandard.

Chapter 16, on controls, results and economics, is much more important than is indicated by its few pages. The chapter discusses the means used to find out whether the underwriting procedures followed are giving the desired results and mentions the role of annual mortality studies, review of large claims, early claims, and comparison with studies of other companies. Suggestions are also made for checking on the relationship with the field organization and for evaluating certain procedures such as nonmedical, attending physicians' statements, use of inspection reports, special tests, etc. The authors conclude that:

An unsatisfactory mortality takes a long time in working through to its full financial impact on the company. If not recognized early enough it may require an abrupt change in policy to correct it, including possibly the rebuilding of the field organization. The discovery of early trends and of what is happening to recent issues is of paramount importance.

Results must be satisfactory to the field force to be satisfactory to the management. This requires that underwriting policy be understood and supported and coordinated with company policy on agency development.

Frequent tests are the only way to know whether the course followed is the one mapped.

Chapter 17 has a brief general description of the organization which selects risks and how it is related to other parts of the company. The various steps are traced from taking the application to the delivery of the policy, with special emphasis on home office handling and the importance of good agency relations. The final paragraph reads:

The field organization and the home office underwriting organization obviously work together on many problems, and cooperation and harmony are essential. The more

each understands the problems of the other, the more satisfactory will be the relationship. Visits of agents and agency managers to the home office are desirable and visits of underwriters to agency meetings and offices, as far as practicable, will also be worthwhile.

There is no doubt that this will be a long-lasting text on risk selection and invaluable to students. In addition, many portions might well be required reading for anyone engaged in the life insurance business.

PAUL K. FRAZER

* Dorrance C. Bronson, *Concepts of Actuarial Soundness in Pension Plans*, pp. xix, 178, Richard D. Irwin, Inc., Homewood, Illinois, 1957.

This volume, prepared under the auspices of the Pension Research Council associated with the Wharton School of Finance and Commerce, University of Pennsylvania, is one of those rare works which is designed more to make the reader think than to supply him with pat answers. For this reason, it deserves to be read by all who would pass judgment on the actuarial soundness of pension plans.

In the author's words, "The title of the monograph, *Concepts of Actuarial Soundness in Pension Plans*, might imply, then, that the reader was going to be told what actuarial soundness is." While a variety of viewpoints as to what constitutes actuarial soundness are contained in this volume, the author does not really summarize the subject and say, "This is it."

Mr. Bronson does, however, set forth his own definition, which he characterizes as "conservative," as follows:

An actuarially sound plan is one where the employer is well informed as to the future cost potential and arranges for meeting those costs through a trust fund or insured contract on a scientific, orderly program of funding under which, should the plan terminate at any time, the then pensioners would be secure in their pensions, and the then active employees would find an equity in the fund assets commensurate with their accrued pensions for service from the plan's inception up to the date of termination of plan. Note that this criterion would admit of a long time before all the original past service credits reach a funded condition, but the asymptote for the funded ratio is 100 per cent and not something less. Note further, that this definition is tied in with a presumption of the plan's termination. . . .

The elusiveness of the concept "actuarial soundness" is illustrated by the following statement:

Whether either of these is sufficient for an "actuarial soundness" label is a matter of opinion and indicates the penumbra of doubt on the whole question. The writer's feeling is that in many instances the "interest only" method, while not actuarially sound by a conservative's definition, is justified, but that when a situation reduces to . . . lower than a 50 per cent funded ratio, even a looser definition of actuarial soundness becomes inapplicable.

After reviewing the interest which various branches of government have shown in pension plans, the author makes the following observation: "Do all of these laws and bills recently cropping up mean that in one way or another

we are going to have legislated actuarial soundness (by whatever definition) for pension plans? It probably does in the end." And later, "The main question pertinent to our subject was whether an existing agency or some new one under legislation to come was going to evolve into mandating 'actuarial soundness' along the lines of the premiums and reserve laws governing life insurance. To my mind, it is doubtful that this could be done on any rigorous basis or, if so, that it would be wise."

It is this area of the subject, perhaps more than any other, which warrants serious consideration of this subject by actuaries. Surely if the phrase "actuarial soundness" has so many meanings and facets, and at the same time there is reason to expect eventual legislative action on the subject, this is a matter which each actuary should study. A good place to start is with Mr. Bronson's scholarly and philosophical study.

WENDELL MILLIMAN

* J. F. Pickrell, *Group Disability Insurance*, pp. xxii, 255, Richard D. Irwin, Inc., Homewood, Illinois, January 1958.

This book is an addition to the series of research studies in insurance published by the S. S. Huebner Foundation at the University of Pennsylvania and is intended to complement the previously published *Group Life Insurance*,¹ by Gregg, and *Group Annuities*,² by Black, as a description of the group insurance field. The author, who is professor of insurance at North Texas State College, acquired his knowledge of group insurance solely from research and interviews with group insurance experts which were completed during his Huebner Foundation fellowship several years ago.

The bulk of the text recites in detail a number of technical characteristics of the group insurance contracts and coverages offered by most leading insurers, and the mechanics of rate-making, underwriting and administration of group contracts. In several places, the author added his own evaluations and comments on these practices.

The book consists of 11 chapters, including introductory and summary chapters, 3 appendixes, and an extensive bibliography. Among its features is a good summary of the various State Cash Sickness Laws and the activity and participation of the Group Insurance industry in the underwriting of these plans, together with a brief description of other existing and proposed legislation for statutory disability insurance. A separate chapter describes the selling of group insurance, with comments on commission scales, initial screening of prospect groups, the problem of Blue Cross competition, and the use of retention quotations in cost competition among insurers. An effective description is given of the mechanics of installation and continuing administration of group insurance programs, including enrollment of employees, home office underwriting review and issue, premium collection and claims administra-

¹ Reviewed in *TSA IX*, 467.

² Reviewed in *TSA VII*, 554.

tion. The author also discusses methods and data in the determination of scales of premium rates for various group coverages. His chapter on underwriting has a section on initial underwriting which highlights certain special problems related to small groups and negotiated trustee cases. Following a chapter on reserves is the final chapter which includes a discussion of the growth of group disability insurance in terms of premiums and number of individuals covered, together with a critique of the entire field.

Despite the thorough treatment of many details and technical features of group insurance, exception can be taken to the author's statement in the preface that the book is a "comprehensive analysis" of the subject and the statement in the Foreword that it presents an "up-to-the-minute picture of this vitally significant area of insurance." The book lacks timeliness because of its inadequate treatment of such recent important developments as the broader extension of the major medical concept in benefit design, or of developments outside the insurance industry which affect group insurance.

The book lacks comprehensiveness because of the failure of the author to contribute any over-all perspective of analysis of the subject to his dissertation. The book offers neither a searching criticism and appraisal of the group insurance method of meeting the financial burdens of disability nor an adequate discussion of the basic problems and accomplishments that must be studied and evaluated by the reader to arrive at his own appraisal. Insufficient attention is given to reasons why various practices are followed, either in terms of objectives or in terms of the climate and circumstances which govern practices, and too many important topics are omitted.

At the present time there is great public interest in the general subject of insurance against the expenses of medical care. The growth of group insurance has made this subject an important factor in the over-all financing of medical care, and practices in the medical field are influenced somewhat by the nature and extent of insurance coverage of medical expenses. A truly comprehensive analysis of group insurance principles must necessarily include some description and analysis of the interrelationship of group insurance and other financing methods with medical practice and medical economics, as well as problems and progress in the area of coordination between the insurance industry and the medical industry. This discussion should also include an analysis of the problems of multiple coverage, duplication of coverage, overinsurance, effects of insurance on fees charged by the medical profession, and administrative burden and expense imposed on the medical profession by group insurance practices. Professor Pickrell's neglect of this important topic is so complete that he has failed to mention the work or even the existence of the Health Insurance Council at any place in his text.

Another shortcoming of the book is that it does not include adequate discussion or analysis of the objectives of group disability insurance from the point of view of the insured public, labor, employers, insurance companies and insurance agents and brokers. An adequate analysis of this subject would

require attention to such various topics as the nature of the public's demand for coverage, and the impact of inclusion of group insurance as a subject for collective bargaining on the nature of group insurance benefits and on the operational practices of companies in the group field. The attitude of organized labor and other segments of the public toward the growth of the major medical concept in group insurance is worthy of extended discussion. An analysis of the various organizations underwriting group disability insurance and the reasons and background of this group insurance operation would be similarly valuable in this respect. Analysis of the broad topic of costs and economic efficiency of group insurance as a financing device would be an integral part of an appraisal of its effectiveness in attaining its objectives.

The discussion of competition between group insurance and Blue Cross-Blue Shield organizations should have been expanded to include an analysis of the basic cost advantages held by the Blues through their direct contracts and affiliations with hospitals and doctors and their local organizations and its exemption from desirable regulation and taxation by the states. An evaluation of effects on group insurance operations of Blue Cross competition would also include reference to the effects of Blue Cross on the administrative operation of hospitals. There should also have been a discussion of self-insurance as an additional competitive force and its effects on coverage from the viewpoints of employer or trustees and the individual employee.

The discussion of legislation and regulation related to group insurance includes no attempt at evaluation of the effectiveness of restrictive regulation in improving the insurance coverage available to the public versus the stifling effects on progress and development created by the philosophies of regulatory authorities and the increasingly complex mechanical problems of operation related to State Insurance Department regulation. The analysis of government activity in the disability insurance field should also have included comments on the financial experience developed for government insured programs in Great Britain, certain Canadian provinces, and elsewhere and their implications with respect to possible adoption of governmental programs in the United States.

The important problem of financing of medical care for retired employees and their dependents through the mechanism of group insurance is given very inadequate attention and analysis. The failure of the author to give any indications of the costs of such coverage results in failure to emphasize the financial magnitude of the problem. The text does not give adequate treatment to the efforts and progress which have been made by insurance companies toward solving this problem in recent years. Instead, it includes the author's original recommendation for a system of advance funding of postretirement coverage based on the assumption, which could easily have been shown not to be true, that costs of medical care increase no more rapidly than either the cost of living or values of equity securities and investments.

The author's strong recommendation for a statutory requirement of conservative contingency reserves as a device for improving the adequacy of premium rates is reasonable from a theoretical actuarial point of view but fails to recog-

nize the impact of a further discriminatory price differential with competitors on the economic efficiency of the group insurance method and its attractiveness to the buying public. Despite the inclusion of certain comments which help to emphasize the impracticality of strict governmental premium rate regulation, the author gives the impression of believing that more restrictive rate regulation would be desirable to the industry and to the public.

The book is intended for readers interested in insurance who have no familiarity with group insurance, yet it is devoted almost entirely to matters of detailed aspects of group insurance to the exclusion of adequate discussion and analysis of the fundamentals of group insurance most likely to be of interest and of value to the outsider. It is regrettable that this narrow, shallow approach was taken in the preparation of this book. A far more effective result would have been achieved by expanding upon the broader ideas and approach incorporated in the various chapters of the Huebner Foundation's previous volume of *Lectures on Accident and Sickness Insurance*.³

Actuaries already have available better reference information on technical aspects of group insurance in the study notes included in the syllabus for Part 8 of the Society's examinations. A better analysis of the broad general problems of group insurance operations is given in the volume of *Lectures on Accident and Sickness Insurance* just cited. To actuaries inside or outside the group insurance field, this book does not add any useful knowledge or perspective to that available in these other references, except perhaps a reiteration of the disturbing fact that we in the group insurance field have somehow failed to communicate our philosophies and accomplishments to the various publics so vitally interested in our product and that further efforts in this direction are urgently needed.

To those outside the actuarial profession, the book is a useful reference for some details of group disability insurance.

JOSEPH W. MORAN

Financing Health Costs for the Aged, pp. xiii, 239, Office of the Special Assistant, Problems of the Aged, State Capitol, Albany, New York, 1957.

This volume is a report of a two-day conference convened by Governor Harriman at the State Capitol in Albany on December 6th and 7th, 1956. The purpose of the conference was to explore the possibilities of providing comprehensive medical care for older people, using prepayment principles as much as practicable. The conference participants consisted of a large group of experts in all related fields.

The first section of the book is classified as the Conference Documentation. An article, "Financing Medical Care for the Aged," by Oscar N. Serbein, outlines the nature and extent of the problem and presents a number of tables with miscellaneous background information from commonly cited sources. The second article, "Cost of Medical Care for Those 65 and Over," by Odin

³ Reviewed in *TSA* VI, 628.

W. Anderson, summarizes the findings of the survey conducted by the National Opinion Research Center at the University of Chicago and financed by the Health Information Foundation.¹ Henry W. Steinhaus, in the third article, compares methods of caring for the aged in the United States with the British system. He points out that Britain has had wide abuse of its plan by the aged because of the free care and that cost estimates for the future are nearly impossible because of constantly changing factors. Franz Goldmann and Joseph T. Freeman, in two subsequent articles, supplement and emphasize the statistics and problems presented by the other authors.

Prior to the Conference, a letter was sent to a group of twenty experienced experts in the field requesting their suggestions as to what constructive steps New York State might consider as a positive approach to this problem. The replies do not lend themselves readily to classification, but the more frequently recurring suggestions are the following: first, make it possible for the aged to carry voluntary health insurance by prorating increased payments back to the earlier and more productive years; second, promote industrial health plans that provide for continued benefits after retirement; third, make State grants or subsidies to existing prepayment plans; fourth, include health benefits under OASI; fifth, create a State-sponsored insurance fund.

On the first day of the conference the participants were divided into three committees, each working independently. On the second day they reported the results of their deliberations.

One group listed the following points of general agreement: The conversion privilege and noncancelable health plans should be offered more widely to retired people; group plans should be encouraged to continue benefits after retirement; the dependents of retired people should be covered for life even after the death of the employee; the types of groups which can be legally insured should be expanded; dependent definitions should be changed to include collateral dependents; prefunding during active years is necessary; there must be Federal, not State, Government assistance in financing; and the methods of help to be employed need more study.

Another group limited their study to the financing problem. They recommended the use of tax monies for those now over 65. For those now under 65 they recommended prefunding through the use of an additional percentage deduction in the OASDI program which would be specifically allocated to this benefit. A minority suggested prefunding through higher active rates in voluntary plans.

A third group recommended that voluntary plans should be noncancelable and that it should be illegal to change rates on account of age or sickness. Their thought was that the State should help in the financing and should increase the help that they now give to ordinarily self-supporting medically indigent people. Welfare Departments should pay the premiums for public assistance recipients.

¹ Reviewed in *TS.A VIII*, 639.

It was not intended that the Conference should come up with a solution to the problem of financing medical care for the aged. An awareness of the problem and its magnitude is a big step toward its future solution. An appendix contains the report of the Interdepartmental Health Resources Board on Financing Needs of the Aging. This is dated January 29, 1957. The report classified the resolutions of the Conference which it accepted, and other matters it deemed pertinent, into three general divisions; matters relating to health insurance; matters relating to the provision of medical services; and matters relating to the public assistance programs. Each of these was considered further with regard to those items that might be implemented immediately through legislative or administrative action; those which are already permissible under existing laws, rules or regulations, but appear not to have been adequately utilized; and lastly, items which should be referred for additional study.

FRANK W. BIESE

*D. M. McGill, Editor, *Life Insurance Sales Management*, pp. xvii, 301, Richard D. Irwin, Inc., Homewood, Ill., 1957.

This volume, the seventh of the "Lecture Series" of the S. S. Huebner Foundation for Insurance Education, represents the joint effort of 12 contributors, each writing on a different topic. The authors were undoubtedly selected because of their unique qualifications in their respective fields and their writings certainly confirm what would be expected of them. Unfortunately, the individual lectures were not coordinated for publication purposes, with the result that there is a considerable amount of duplication and repetition of a number of subjects, but perhaps this is inevitable.

The first part of the book, devoted to sales organization, has separate chapters on the impact of the product on the sales organization, the role of the Agency Department, and field organization and management. It is stated at the outset that there are many differences between the marketing of life insurance and the marketing of other products, although the fundamental principles are not different. The public may not even be aware of its life insurance needs, and, even if it is, probably does not know how to satisfy them. Although it is the job of the life insurance agent to help his client decide what he needs, the agency department is the spearhead of the company as a marketing organization.

A substantial portion of the book is devoted to the subject of market research. Such research is necessary to identify the markets, measure potential demand, make sales forecasts, and ascertain consumer attitudes and opinions. This effort, which is a recent development in the life insurance business, should give weight to many factors in addition to population shifts, disposable income and inflationary trends. One of its primary purposes is to find for the individual salesman the most favorable possible position in the marketplace. The aim is to bring together a man and a market, within the framework of reasonable

cost. In fact, a sales program cannot be planned intelligently without a comprehensive study of the market.

Many of us have faced the difficult problem of determining the life insurance needs and demands of the general public and how it might best be served. The sample survey, although serving a useful function in many ways, does not answer the problem since few individuals know enough about the technical subject of life insurance to appreciate what is best for their own needs.

Neither can the Field Force provide the answer, for it has too much of a tendency to ask for a sales portfolio that would include practically any type of policy that is suggested or comes to mind or that is being issued by a competitor company, without particular regard as to the cost and whether or not such a practice would result in gross inconsistencies. In the opinion of the reviewer, experience has shown that the life insurance company controls to a great degree the types of insurance being purchased by the public, and perhaps this is the way it should be.

Any program initiated and managed by the Agency Department must have institutional support in order to be successful. The Agency Department has the task of interpreting buyer interest to the company, and it falls upon the other departments to help satisfy the needs of the buyer. Therefore, every department is dependent upon the others for the execution of the company's over-all program. Even the Investment Department should work closely with the Agency Department, despite the fact that their operations are quite dissimilar in nature. In particular, there is the necessity of obtaining a meeting of the minds between agency thinking and actuarial thinking, in addition to the thinking of the other areas within the company, in order to accomplish objectives.

It is the function of top level organization to establish company objectives and to plan for achieving such objectives. The setting of objectives must take account of company policy and philosophy, company size, competitive position, sales portfolio, physical structure of the territory to be developed, Agency Managers' abilities, and financial capacity of the company to meet the capital requirements of the objectives. Once the objectives have been established, the Agency, Actuarial and Investment Departments must appraise their ability to adjust merchandise, selling tools and sales manpower to meet market trends. Planning the sales effort is not primarily or exclusively an Agency Department function but should be a major concern of the top management of the company. The results of the plan must be reviewed frequently in the light of the plan itself, and the objectives modified in view of the experience.

The second part of the book, concerned with sales planning, has chapters on product planning, market planning, price planning, planning the sales effort, and sales planning at the agency level.

In planning our products, there are three basic economic needs to be satisfied: the need for indemnity; the need for accumulation of savings; and the orderly distribution of the accumulations. The life insurance product to meet these needs should be changed continually in the light of changing conditions. Some companies use a formal committee appointed by the President to consider

ideas for new products, the committee being made up of representatives of the various departments. Other companies feel that a separate department should be activated to concern itself primarily with new products and new ways of achieving objectives. Recent trends in product design are concerned with emphasis on term insurance, family income policies and riders, family policies, credit insurance, common stock investments, variable annuities, special high minimum policies, juvenile policies, group insurance, policy text, major medical, sickness and accident insurance. There is the competitive urge to keep up with the procession and, still more important, to be among the leaders. In connection with this subject, it is the feeling of the reviewer that a company considering the introduction of a new policy or practice should ask itself what the effect will be, not just on itself, but on the entire industry.

Price planning is not an exact science; also it is not static but a continuous process. Price planning involves appraising the nature of the product, the nature of the market, production and distribution costs, competition and regulatory processing—all this in addition to methods of forecasting mortality, interest earnings and expenses. Thus, the rate book not only involves mortality tables, interest rates and expense factors, but reflects company philosophy as to growth, financial status, character, surplus position, and other factors, many intangible. These suggest that today, more than ever, the actuary must have a broad concept of the job he is trying to do. After all, the primary purpose is to provide liberal and essential services to the insuring public.

The third and last part of the book, on the creation and maintenance of a sales force, has chapters on manpower building and replacement, the development of skills and capacity, supervision and evaluation, and leadership and motivation. Supervision, not to be confused with management, is the medium through which management carries out its plans and policies. Without a sound system of management and supervision, successful results should not be expected. And a sound system in itself is not enough; it must be manned by competent men in every spot. Great strides have been made in the training of both field and home office personnel, but there remains the basic problem of reducing the turnover of agents. Today, the industry offers every opportunity for adequate education and training for the agency force. However, without the quality of reasonably adequate leadership and ability to motivate men, no manager may hope to be successful—no matter how carefully he plans.

Only a few of the most important points in the book have been touched upon, in a few instances with the personal opinions of the reviewer. The book is recommended reading to the actuary.

MILTON J. GOLDBERG

* T. F. Crocker, Jr., H. M. Sarason, B. W. Straight and L. H. Vetter, *Retirement Plan Mathematics*, Volume II of the *Actuary's Pension Handbook*, pp. 126, Pension Publications, Los Angeles, 1957.

As the title indicates, this book supplies explanatory and illustrative material to assist in the use of the tables available in the *Actuary's Pension Handbook*,

Volume I.¹ Each chapter of Volume II contains brief descriptive and explanatory text and is accompanied by problems with complete solutions illustrating the use of the tables in Volume I.

Chapter I, "Explanation of Tables," and Chapter II, "Level Payments," describe the mathematical steps used in the derivation of the valuation factors which are presented in Volume I. This description is accompanied by two tables with the specific calculations for the factors based on the T-2 Continuance Table and the S-4 Relative Salary Scale, both with 3% interest. This explanation and illustration fills in the intermediate steps between the basic assumed rates and the final valuation factors as presented in Volume I. The problems illustrate the basic probability and valuation functions.

Chapter III, "Funding Methods," describes very briefly the principal funding methods and suggests methods of projecting pension costs for future years, including costs for a matured population. The problems deal with the simpler formulas for costs and future membership estimates.

Chapter IV, "Inauguration of Plan—Effect of Variations," introduces a form of actuarial balance sheet and discusses the aggregate gain or loss that may be disclosed between two annual balance sheets. More elaborate problems in entry age normal cost calculations are included with this chapter. Following the major emphasis of this Volume, the balance sheet is of the form showing the present value of all prospective benefits as a liability and the present value of prospective contributions as an asset.

Chapter V, "Miscellaneous Benefits," discusses the calculation of costs and values for such fringe features as early retirement options, death and withdrawal benefits, survivors' annuity benefits and disability benefits. This chapter includes 18 tables, 23 pages, of suggested values and factors for disability benefits, survivors' income benefits and joint life annuity values. The UAW service tables are included among them. The problems are illustrative of cost calculations for those benefits.

Chapter VI, "Choice of Assumptions," deals very briefly with investigations of experience as a basis of choice of appropriate assumptions. The chapter suggests that appropriate assumptions, presumably one of the combinations shown in Volume I, may be determined "for plans in which there are as few as 100 new employees per year."

The authors set themselves a most difficult task of preparing adequate directions and illustrations for the actuarial assistant who is not thoroughly grounded in the basic techniques. The results of the two volumes combined, the factors and mathematical descriptions and illustrations, may well be sufficient for the uninitiated to pick up and apply the suggested methods for actuarial valuations.

In conformity with the tables in Volume I, all valuation factors involve both termination rates and salary scales. In view of the statement in the last chapter that the methods and assumptions are applicable only to those

¹ Reviewed in *T.S.A* VII, 555.

plans that cover large numbers of employees, there would appear to be neither factors nor methods presented for the valuation of smaller plans. Plans with smaller numbers of members will generally require other methods and factors, including appropriate factors, using mortality and interest discounts without turnover or salary scales, or using interest discounts only.

One of the most effective ways of utilizing actuarial assistants is by the elimination of actuarial assumptions that are either not required or not fully justified by the size of the case. The elimination of the turnover and salary scales greatly simplifies the factors and procedures. Appropriate tables of factors and description of methods for smaller plans would have added much to the value and general utility of the *Handbook*. In the long run there may be many more small and medium sized plans for which the factors and methods shown are not applicable.

The treatment of the unit benefit single premium method of valuation might well have been expanded as one method of dealing with smaller plans. The experienced actuarial consultant may be accustomed to advising the insurance of such smaller cases and, hence, may use group annuity single premium rates and methods. The present volume could easily lead the inexperienced consultant to stretch the application of the factors and methods of the *Handbook* to the smaller plans, where the specific factors available would not be appropriate.

A more adequate discussion of the single premium valuation method might also have led to a more general approach to the balance sheet statement, producing a very different type of statement. A valuation of benefits accrued to date, of course, produces values of a different order of magnitude from the valuation of prospective benefits and prospective contributions. It is undoubtedly difficult for the layman, no matter how familiar he may be with financial statements, to understand a balance sheet inflated both as to assets and as to liabilities with such prospective values. The type of statement shown in the illustrations is intelligible to the actuary's client only after considerable education and necessarily carries a much higher degree of uncertainty or doubt as to the validity of the whole statement.

Chapter IV briefly suggests that the gains and losses which may arise from variations in actual experience from each of the assumptions used may be segregated and that this process may be used as a test of the mathematical consistency between two successive valuations. This subject is not pursued far enough to present methods of practical application. Such an analysis is a powerful tool and worthy of more adequate treatment. The most accurate calculation and checking techniques may fail to catch arithmetical errors which may be caught by a complete analysis of gains and losses. The actuary who works with trained or untrained assistants must use such devices to assure accuracy of the valuation results.

An obvious suggestion that would speed up the arithmetical work of the entry age normal cost method illustrated is the elimination of unneeded apparent accuracy in the number of decimals carried in the valuation factors.

When costs are sought as a percentage of payroll or per member, the results may be needed only to 3 or 4 significant figures. The use of the required factors rounded to a similar number of significant digits will normally give all the accuracy that is desired and that is justified by the reliability of the assumptions used. The elimination of unnecessary decimals would save materially in copying and calculation time.

For those who are accustomed to the techniques emphasized in the *Actuary's Pension Handbook*, Volume II should prove useful.

JOHN B. ST. JOHN

W. D. Bell, *A Management Guide to Electronic Computers*, pp. viii, 403, McGraw-Hill Book Company, Inc., New York, 1957.

The stated purpose of this book is to provide the businessman and executive with a simple, nontechnical explanation of what an electronic computer is and what it will do, with factual information about the present state of electronic business systems, with a realistic look at the future of electronic data-processing systems, and with concrete suggestions to guide a company interested in acquiring its own electronic equipment.

The book has twelve chapters. These are followed by eleven case histories in which the actual experience of business concerns provides concrete illustrations of the various aspects of computer study, selection, installation and operation.

Chapter 1 lists electronic applications and the benefits which may be expected from the use of computers. While referring to such advantages as speed, accuracy and reduced costs, it emphasizes that management control is the real key to the importance of computers. In this connection, it is interesting to note that life insurance seemingly considers itself an exception to this conclusion for, according to a recent survey, such companies were the only type which ranked cost savings as the most important benefit to be derived from the use of computers.

Chapter 2 describes, in very general terms, the main components of an electronic computer—input, storage (or memory), arithmetical and logical section, output, and control unit. The author's statement that the memory system of a computer largely determines the cost, speed and adaptability of the system brings to mind that what is needed most in the electronic computer field is bigger, high speed memories at a fraction of present costs.

Chapter 3 is the first of a series dealing with the components of an electronic system in more detail. This chapter covers input devices. It discusses the merits and demerits of punched cards, perforated tape and magnetic tape with respect to compactness of data storage, limitations of record length, speed of data reading and writing, cost, adequacy for primary records, auditability and legal acceptance. The final vote is in favor of magnetic tape, as it must be. There are very few instances where the full potentialities of a large-scale electronic computer in business applications can be realized without using

magnetic tape for primary input and output. This chapter also discusses in clear terms auxiliary character sensing machines, the common language concept and special purpose recorders.

Chapter 4 is devoted to a comparison of various types of storage or memory—principally internal memory. The exposition of the workings of the different forms of memory is given in nontechnical language which most readers will be able to follow. Perhaps not enough emphasis is placed on the fact that magnetic tape for the most part is used as external storage and is therefore, in general, not strictly comparable with the internal types of storage. The chapter contains a good example of seemingly contradictory statements which are not fully explained and which occasionally mar this otherwise excellent book. In an enumeration of the advantages of magnetic drums, it is stated that they are reliable and require little maintenance; yet, on the same page, among the disadvantages of magnetic drums it is indicated that they are subject to wear and maintenance requirements.

The description of the arithmetical and logical section of a computer in Chapter 5 is adequate for the purposes of most businessmen. Part of the chapter covers the differences between scientific and business computers and in so doing furnishes a lucid explanation of floating decimal arithmetic and the variations in the significance of the binary system in different types of computers.

Chapter 6, entitled "Output Devices," concentrates on high speed printers and provides a comprehensive outline of what is available in this line of equipment. The sample given of work turned out by a dot printer flatters this type of machine, since photographic reduction of dot printing improves its appearance considerably. Perhaps the author should have remembered that this chapter is in a way the obverse of Chapter 3 on "Input Devices"; additional space might well have been devoted to other forms of output.

Chapter 7 covers computer control devices. Apart from checking features, the author wisely avoids discussing the internal control system of a computer as not essential to an understanding of what the machine will do for management. The importance of quality maintenance service is properly stressed. The discourse and conclusions on "Programmed versus Built-in Checking" are well worth study.

Chapter 8 relates to programming. In a book for businessmen and executives it is always difficult to decide how much space should be given to this subject. The author's solution to this problem is to suggest part way through the chapter that the reader not interested in the details of programming can skip the remainder. His discussion of "Requirements for a Programmer" is disappointingly short. In the comments on automatic programming no mention is made of the fact that programs produced by automatic methods tend to be longer than necessary and that this type of programming is seldom appropriate for data processing operations which have to be repeated time and time again. The value of automatic programming is with respect to individual nonrepetitive jobs or problems. The paragraphs included in this chapter

on "Single versus Multiple Address Command Systems" and on "Fixed Word Length versus Variable Word Length" are interesting and objective.

Chapter 9 is likely to be a trifle disappointing to most readers. Discussion of components which may bring improvement in computer design is virtually limited to transistors. The look at a factory and office of the future raises all kinds of questions regarding the desirability of single all-embracing computers versus a number of not so powerful computers. A discourse on what developments are most needed in the computer field today would have added immeasurably to the value of this chapter.

Chapter 10 sets forth the pros and cons on certain controversial points such as obsolescence, rental versus purchase, one large system versus two smaller systems, installation considerations, maintenance, and the size of the operation necessary to justify the acquisition of an electronic system. The author indicates at one point that no company should assume that electronic computers are ready for any and all applications. In view of the examples of actual applications given later in the book it would, perhaps, have been helpful to have mentioned some applications for which computers are not ready. The availability of engineering maintenance is given as a factor in favor of rental, but in practice a company can purchase a machine and contract for the manufacturer to supply maintenance. The author cannot be said to have covered all aspects of these controversial questions, but he covers enough to guide any company in a full investigation; in the final analysis, most companies must complete their own investigation, making their own decision based on their own situation.

Chapter 11 makes the sound suggestion that the all-important question of deciding whether or not an electronic computer can be beneficial to a company's operations should be studied in two phases. The contents of the Phase I study are outlined in this chapter. This is a preliminary study at the end of which, if favorable possibilities for electronic data handling are indicated, management is asked to approve the costs of the more expensive Phase II study which will furnish them with adequate data for reaching a final decision. Phase I involves mainly: (1) acquiring of electronic data processing knowledge by the study group; (2) preliminary survey of manufacturers' machines (a comprehensive set of criteria for comparison of machines is included in the chapter); (3) preliminary studies (in no great detail) of possible applications; (4) cost aspects in broad terms. In connection with the latter the author recommends that a study group should never attempt to sell senior management the idea of acquiring a computer using cost savings as the justification. He suggests instead the advantages of increased speed, greater flexibility, much better operational control and ability to handle new applications. No final decisions are made in Phase I.

Chapter 12 outlines the more detailed Phase II study. This study covers such things as: (1) the recommendation of a specific computer; (2) the choice between rental and purchase; (3) detailed study of applications with anticipated advantages; (4) cost comparison of the best possible results with and without

an electronic system; (5) timing schedule covering securing of equipment, training of employees and conversion of operations; (6) intangible advantages; (7) disadvantages and problems. Emphasis as regards the criteria for selecting a machine is sound, with the operating speed being listed as least important. While it is recommended that other companies be consulted as to their experience with a particular machine, it is indicated that there is no substitute for running tests of a company's own work. The certain danger of underestimating running time for an individual problem is rightly stressed. The author also draws attention to difficult political situations which may arise from consideration of an electronic installation and suggests that a completely new and independent service organization be contemplated with operational departments, each retaining responsibility for its own work. Chapters 11 and 12 are two of the most illuminating and valuable chapters in the book.

The eleven case histories which follow form a most valuable addition to the volume by providing the reader with examples of the actual experience of eleven companies which have pioneered in this field. A number refer to operational experience with individual types of equipment. Case Histories I, II and VI are examples of special purpose machines built to fit specific applications of an inventory nature. By contrast Case History XI refers to the use of a general purpose machine for inventory control. Case History III deals with the studies of the Society of Actuaries and the Metropolitan Life which are, of course, covered fully in the Society Committee Reports. Case History IV gives helpful guidance on some of the traps to avoid in the initial approach to putting systems on an electronic computer and provides an interesting example of the range of applications for computer processing. Case History V is valuable for its experience on underestimating processing time. Case History VII covers the selection of a medium-sized computer with decentralization and integration of supporting punched card equipment. Case History VIII serves as an interesting example of a single Operations Research approach to the problem of production scheduling. Case History IX provides a graphic representation of the problems of installing a large-scale computer. As with Case History VII, Case History X demonstrates the ease of integrating a medium-sized punched card computer with existing punched card systems, while Case History XI warns against underestimating the problems of conversion from cards to tape on a large-scale machine. In all, the Case Histories provide a wealth of detail on the solutions of the problems which arise in the effective utilization of electronic computer systems.

Mr. Bell has achieved to a notable extent the objectives laid down in the opening pages of his book. The reader is indeed provided with a simple, non-technical, yet illuminating exposition of the subject and many valuable suggestions for the guidance of companies interested in acquiring their own electronic equipment. As might be expected in such a fast-developing field, his information on the present state of electronic systems is no longer completely up-to-date, while his look at the future might be considered to fall somewhat

short of his objective: but, this notwithstanding, *A Management Guide to Electronic Computers* is certainly among the most informative and helpful works on this subject which have yet been published.

JOHN W. RITCHIE

The Registrar-General's Decennial Supplement, England and Wales, 1951, *Occupational Mortality, Part II*. "Commentary," vol. 1, pp. xii, 171, and "Tables," vol. 2, pp. ix, 431, H. M. Stationery Office, London, 1958.

A news release from the General Register Office states: "This report is the tenth in a series of analyses of mortality by occupation, the first of which related to the year 1851. . . . The deaths registered in 1949-1953 have been analyzed according to the occupation of the deceased (except for married women). Death rates have been calculated on the basis of the populations (by occupation) derived from the 1951 census." A full review of these two volumes will appear in a forthcoming issue of the *Transactions*.

SELECT CURRENT BIBLIOGRAPHY

In compiling this list, the Committee on Review has digested only those papers which appear to be of direct interest to members of the Society of Actuaries; in doing so, the Committee offers no opinion on the views which the various articles express. The digested articles will be listed under the following subject matter classifications: 1—Actuarial and other mathematics, statistics, graduation; 2—Life insurance and annuities; 3—Accident and sickness insurance; 4—Social security; 5—Other topics.

References to allied subjects will be found in the following publications: *Mathematical Reviews*, published by the American Mathematical Society—Subjects: Theory of probability, mathematical statistics, mathematical economics, various other mathematical topics; *Monthly Labor Review*, published by Bureau of Labor Statistics—Subjects: Cost and standards of living, employment and employment services, fringe benefits, handicapped, industrial hygiene, industrial relations, labor organization and activities, manpower, older workers and the aged, personnel management, social security (general); *Population Index*, published by Office of Population Research, Princeton University, and Population Association of America—Subjects: Mortality, fertility, marriage, divorce, the family, various other demographic topics; *Social Security Bulletin*, published by Social Security Administration—Subjects: Retirement and old age, employment, maternal and child welfare, health and medical care, various other topics in social security; *Journal of the Institute of Actuaries*—The review section contains digests in English of articles appearing in foreign actuarial journals.

ACTUARIAL AND OTHER MATHEMATICS, STATISTICS, GRADUATION

M. T. L. Bizley, "A Measure of Smoothness and Some Remarks on a New Principle of Graduation," *Journal of the Institute of Actuaries*, vol. 84, Part 8, September 1958.

A new measure of the smoothness of a function is suggested as a substitute for the classical ones based on differences. The new measure is unaffected by a rotation of the coordinate axes (and therefore unaffected by interchanging x and y), and is shown to be equivalent to the absolute value of the derivative of curvature with respect to arc length. Thus, smoothness is measured at a particular point on a curve and varies from

point to point. The author does not mention that his measure of smoothness does, however, depend on the relationship (frequently arbitrary) between the horizontal and vertical scales. Thus the premium for a given contract as a function of age might be smooth if expressed in shillings but not smooth if expressed in pounds.

The new measure of smoothness suggests a new principle of graduation which seeks "to minimize the length of the curve subject to the constraints imposed by the conditions of adherence."

J. E. Walsh, "Actuarial Validity of the Binomial Distribution for Large Numbers of Lives with Small Mortality Probabilities," *Skandinavisk Aktuarietidskrift*, 1956, Parts 1-2, p. 39.

In a previous paper (*ibid.*, 1952, p. 11) the binomial distribution was shown to be valid under rather general conditions for the case of a large number of statistically independent lives with possibly unequal mortality probabilities. This note extends these results to some situations where the lives are not necessarily statistically independent. An analysis is presented which indicates that these situations include most actuarial applications involving a large number of lives.

LIFE INSURANCE AND ANNUITIES

A 1949-52 Tables for Assured Lives, Vol. I, pp. xv, 293; published for the Institute of Actuaries and the Faculty of Actuaries at the Cambridge University Press, 1957.

These tables were compiled to supersede the A 1924-29 Tables, which were previously the standard tables most generally used in Great Britain for life insurance calculations. They are based upon data collected for the Continuous Investigation into the Mortality of Assured Lives, and relate to the experience during the four years 1949-52 among male lives accepted for whole life and endowment insurance at standard rates. The tables have a two year select period, with select functions calculated by the method of "damaged lives" (R. E. Beard, *Proceedings of the Centenary Assembly of the Institute of Actuaries*, vol. 2, p. 89). Volume I includes basic mortality and monetary functions for single lives with interest rates from 2% to 4% at $\frac{1}{4}$ % intervals.

A. M. Skolnik and J. Zisman, "Growth in Employee-Benefit Plans," *Social Security Bulletin*, March 1958.

In this article estimates of coverage, contributions, and benefit payments under employee-benefit plans in 1956 are compared with those in 1954, classified as to type of benefit. It does not include workmen's compensation, old-age, survivors, and disability insurance, and the railroad retirement programs. Where practical, benefit plans for public employees have been omitted, particularly programs of temporary disability (which includes formal sick leave) and retirement. Estimates of the numbers covered are related to the average wage and salary labor force (full and part time). Also, total employer and employee contributions are related to the aggregate of wages and salaries. For supplementary unemployment, temporary disability, and retirement plans, the numbers covered and the total contributions are related to the number of private employees and their earnings. In 1956, the proportions of employees covered were highest for death benefits and for group hospitalization, both with 63%. These compare with 57% and 59%, respectively, in 1954. Finally, the private-retirement plan estimates were carried back for selected years to 1930. These are segregated into insured and self-insured plans. Employer and employee contributions are shown separately, together with the reserves at the year end, the number of monthly beneficiaries at the year end, and the amount of annual benefit payments.

Pension Plans and the Employment of Older Workers, pp. 57, The Department of Labour Ottawa, 1957.

This report was prepared for an Interdepartmental Committee of the Canadian Government by a Committee composed of members of the Departments of Finance, Insurance, National Health and Welfare and Labour. It presents a brief description of the main types of pension plan in effect in Canada and reviews the ways in which specific aspects of these various types of plans may affect the hiring and retention of older workers. The report discusses, among other things, such matters as the vesting of employer contributions, the preservation of pension credits in the form of paid-up deferred annuities and the identification at retirement of a series of pension credits accumulated through different employers. With the thought that it may be helpful to employers and unions, a number of suggestions are also offered for increasing the size of the pension available to employees at the older ages.

J. W. MacKinnon, "A Canadian Approach to Individual Retirement Plans," *Association of Life Insurance Counsel Proceedings*, vol. 13, p. 753, 1957.

This paper describes the 1957 amendment to the Canadian Income Tax Act relating to "registered retirement savings plans." Under this legislation Canadian taxpayers are allowed to deduct from their earned income certain amounts which they contribute to individual retirement savings plans.

The paper describes the application of the statute to life insurance policies with savings features and to plans offered by trust companies and vendors of investment contracts. It contains references to pertinent actuarial papers and to the sections of the amendment and other laws dealing with the various problems which may arise. The text of the Income Tax amendment is reproduced as an Appendix.

"Problems in the Medical Certification of Causes of Death," *American Journal of Public Health*, vol. 48, p. 71, January 1958.

This is a report of the Committee on Medical Certification of Causes of Death to the Statistics Section of the American Public Health Association. The report first points out the purposes served by medical returns on the death certificate and reviews briefly some earlier investigations of the quality of these returns. A discussion of current problems starts with an account of the traditional "underlying cause" concept, by which a single cause is selected for statistical purposes; the difficulty where there is a complex of conditions is pointed out. Consideration is then given to the problems in the tabulation of multiple causes of death. Also discussed are the part played by changing medical concepts, the role of the facts available to the certifying physician, and the understanding of medical certification procedures by the certifier. The current procedures in the selection of the primary cause of death are discussed and attention is given to the part played by the training and experience of the cause of death coder.

M. Spiegelman, "Mortality Trends and Prospects and Their Implications," *Annals of the American Academy of Political and Social Science*, vol. 316, p. 25, March 1958.

The mortality and longevity of the general population in the United States is traced from 1900 and for Canada from 1930. The major mortality problems are pointed out as the cardiovascular-renal diseases, cancer, and accidents. Mortality is now largely under control for tuberculosis, pneumonia and influenza, diarrhea and enteritis, communicable diseases of childhood, typhoid fever, syphilis, appendicitis and maternal mortality. Death rates are shown for these causes since 1900. Infant mortality is traced since 1920 for subdivisions of the first year of life. The factors in mortality trends and

the prospect are discussed, together with the implications of declining mortality on the structure of population and the family.

ACCIDENT AND SICKNESS INSURANCE

U.S. National Health Survey, *Preliminary Report on Volume of Physician Visits, United States, July-September, 1957*, pp. 25, and *Preliminary Report on Volume of Dental Care, United States, July-September, 1957*, pp. 22, Division of Public Health Methods, Public Health Service, Washington, 1958.

The data for both reports were derived from a sample of the civilian noninstitutional population of the United States during the period of observation. The places of physician visits are the home, doctor's office, hospital clinic (for outpatients only), and a residual category of "other," which comprises place of business, school, insurance office, health department clinic, telephone consultation, and some others. Visits of physicians to hospital inpatients are not included. The visits are also distributed according to type of service (namely, diagnosis and treatment, prenatal and postnatal care, general check-up, immunization, and all other) and to interval since last physician visit. The average annual number of physician visits per person is shown by age separately for males and females, and also for place of visit and type of service. Corresponding averages, without regard to age or sex, are shown for urban places and for rural nonfarm and rural farm areas. Technical notes on methods and definitions of terms used are described in appendixes.

The report on dental care shows the average annual number of dental visits per person by residence and age, the distribution according to the type of service, the time interval since the last dental visit and the percentages of edentulous persons. In most instances, data are presented with regard to age and sex and also separately for urban and rural residence.

Department of National Health and Welfare, *Illness Frequency by Diagnostic Classification (National Estimates)*, Report No. 10 of the Canadian Sickness Survey, 1950-51, pp. 46, Queen's Printer, Ottawa, February, 1957.

This is the tenth in a series of reports based on the Canadian Sickness Survey, 1950-51, reference having been made to the ninth in *TSA VIII*, 651. It deals with the frequency of illness by diagnostic classification. The various diagnostic groups are not analyzed by age, but a breakdown by sex is furnished in most cases.

Department of National Health and Welfare, *Illness Frequency by Class of Illness, Age and Sex (National Estimates)*, Report No. 11 of the Canadian Sickness Survey, 1950-51, p. 39, Queen's Printer, Ottawa, July, 1957.

This is the eleventh in a series of reports based on the Canadian Sickness Survey, 1950-51. Like the preceding report, it deals with illness frequency for classes of illness, the classes being broken down, however, by age and sex instead of by diagnostic group and sex.

Department of National Health and Welfare, *Health Services for Public Assistance Recipients in Canada*, Health Care Series, Memorandum No. 1, pp. xii, 189, Ottawa, September, 1957.

This bulletin presents a description of the special health care services that are in effect in the provinces of Canada for persons in receipt of various forms of public assistance. It contains numerous statistical tables and deals with such aspects of the subject as coverage, benefits, utilization of services, finances and administration.

SOCIAL SECURITY

Department of Health, Education, and Welfare, *Social Security in the United States*, pp. 60, Social Security Administration, Washington, 1957.

This pamphlet, in very brief fashion, discusses the background of the social security program in the United States and deals not only with the programs authorized by the Social Security Act but also with other related public programs. A statistical picture of the operations of social security programs at the present time is given, which is followed by an explanation of the provisions of the various programs. The report concludes with an extensive list of significant events in social security and related fields and with a brief selected bibliography on the subject.

A. E. Hess, "Old-Age, Survivors, and Disability Insurance: Early Problems and Operation of the Disability Provisions," *Social Security Bulletin*, December 1957.

After describing the various provisions of the OASDI system that are concerned with disability, there is an extensive discussion of the administrative organizational structure that has been established to deal with these matters, both within State agencies and within the Federal government. Then, the methods established for evaluating disability are described (the law naturally does not give complete details on this matter). Next, the various administrative procedures are discussed, including claims processing, vocational rehabilitation services, relationships with medical groups, and operations within the various State agencies concerned. The article concludes with a small body of data on current program operations; up to this point, relatively little data for analytical purposes are available because of the time involved in processing the sizable backlog of claims and in tabulating and studying the data.

OTHER TOPICS

A. A. Campbell, *A Method of Projecting Mortality Rates Based on Postwar International Experience*, pp. v, 34, U.S. Bureau of the Census, International Population Reports, Series P-91, No. 5, Washington, 1958.

The method is devised to extrapolate mortality rates to be used only for purposes of making population projections, rather than as "valid forecasts of future mortality rates." This restriction gives recognition to the fact that a specified absolute variation in a mortality rate produces, for most ages, a relatively small variation in the corresponding survival rate. The extrapolation form is

$$m_{x,t} = (m_{x,0} - m_{x,\infty}) e^{-bx} + m_{x,\infty},$$

where $m_{x,t}$ is the central death rate at age x at a time t years after the base year which is designated as 0; $m_{x,0}$ is the central death rate for the base year, which is usually the year for the last observed death rate; $m_{x,\infty}$ is the ultimate assumed death rate; and b_x is a constant for age x to be determined. The ultimate $m_{x,\infty}$ is derived by reducing the observed lows of age-sex-specific death rates (after smoothing) in an international comparison. The value of b_x is an average of the values found from the observed data for the countries with records. Postwar data were used for the most part to reflect the effect of new advances in medicine and public health upon death rates. The limitations of the method are set forth.

C. Taeuber and I. B. Taeuber, *The Changing Population of the United States*, pp. xi, 357, John Wiley and Sons, Inc., New York, 1958.

The authors prepared this volume for the Social Science Research Council in cooperation with the Bureau of the Census. Although census records since 1790 were

available to the authors, they have "selected from the wealth of materials some that provide an over-all view of the changing American population." The first part, on growth, has separate chapters on growth and geographic expansion, changes by age and sex, immigrants, internal migration, urban and rural residence, and metropolitan areas. The second part deals with characteristics and has chapters on marital status, households and families, education, economic activity, and income. The third part is concerned with fertility and mortality, and the last with interrelations in development and the prospects.

E. H. Bernert, *America's Children*, pp. ix, 185, John Wiley and Sons, Inc., New York, 1958.

This is one of the Census Monograph Series written for the Social Science Research Council in cooperation with the Bureau of the Census. For the most part, the study is based upon data from the 1950 Census of Population and some more recent sample surveys of the population of the country. The chapters describe the size and distribution of the child and youth population, correlates of child dependency, living and family arrangements, school enrollment and educational attainment, variations in age-grade school progress, and economic activity.